

Title: Design and Testing of the Variable Electronic Regulator (VER) for Portable Life Support System (PLSS) Development

Authors:

Colin Campbell
NASA Johnson Space Center

Ken Pryzbyla
Carleton Technologies, Inc.
Cobham Life Support, Mission Systems Division

Abstract:

The next generation space suit requires additional capabilities for controlling and adjusting internal pressure compared to that of historical designs. Next generation suit pressures will range from slight pressure, for astronaut prebreathe comfort, to hyperbaric pressure levels for emergency medical treatment of decompression sickness. Historical regulator designs for space suits have been purely mechanical in nature with the performance aspects typical of such designs such as droop. This paper discusses a new approach to providing the tighter regulation band possible with electronic regulation while mitigating the typical short-comings of electronic control: power consumption, loss of power failure modes, start-up time, and reliability. The paper will also address the bench top prototype development and subsequent performance testing with comparison back to mechanical regulators as a baseline.